

Note: The TOR is for turnkey establishment of two micro hydro-diesel hybrid power plants and the organization of sustainable community-based operations.

Terms of Reference

Turnkey Micro hydro-diesel Hybrid Demonstration Projects for Two Isolated Communities

Introduction

<Brief country background and extent of unserved off grid populations>

Background

Even with the aggressive grid extension plan of the Government, a substantial number of remotely located households will not be reached by the grid in the next 10-15 years. Some of these households have organized themselves and have established small, decentralized electricity networks. Almost all of these networks are supplied by micro hydro power. The small streams used to supply the micro hydro generator run dry during four to six months of the year. A combination of a micro-hydro and diesel installation could provide constant electricity supply during the whole year

Almost all of these isolated grid service operations are not financially sustainable. It is the intention of this assignment to review the existing management models, propose and demonstrate a replicable and financially sustainable model to deliver electricity with an acceptable degree of availability and quality.

Objective

The objective of this assignment is to develop, demonstrate and disseminate a replicable and sustainable organizational arrangement to serve isolated grid using micro hydro-diesel hybrid systems.

Scope of Work

The scope of this work contains of the following tasks:

- (a) selecting two existing micro-hydro sites, each serving a community through an isolated grid - one in the north and the other in the central highlands. Capacity of each micro-hydro plant is expected to be about 50 kW or smaller. The plants and/or the distribution network may need to be rehabilitated;
- (b) design a low cost but with acceptable quality, micro-hydro/diesel hybrid power plant to permit the community to receive year-round electricity supplies. The plant should be designed to minimize life cycle cost;
- (c) demonstrate its economic and financial viability, as well as its compliance with environmental and other safeguards;
- (d) prepare bill of qualities, cost estimate, implementation schedule and hardware procurement tender;
- (e) establish a sustainable ownership, management and operations arrangements and a sales tariff;
- (f) train community management and operations staff
- (g) rehabilitate the micro-hydro units and distribution network, as needed, and construct the hybrid systems and commission the plant ;

- (h) preparing a monitoring plan and train Project Management staff in conducting monitoring activities;
- (i) based on the demonstration projects, prepare a Best Practice Guideline for development of Micro-hydro/diesel Hybrid Power Plants for Isolated-grid Operation. The document shall be made available in English and local language, and disseminated to the private sector, local authorities and others.
- (j) organize together with the local counterparts at least two workshops at appropriate times to discuss the main design approaches, management, operation models and Best Practice guidelines. Reports from these workshops will be an integral part of the Best Practice document.

Reporting

- 1. Hybrid system design and rehabilitation plan
- 2. Tender documents and cost estimate
- 3. Management and operation plan
- 4. Commissioning report
- 5. Monitoring report
- 6. Best Practices guideline

Time Schedule

Activity	Oc t	Nov	Dec	Jan	Feb	Ma r	Apr	Ma y	Jun
a) selection of sites		■							
b,c,d) design			■	■					
e, j) building ownership, workshops		■	■	■	■	■	■	■	■
f) training		■			■				
g) construction					■	■	■	■	■
h) monitoring					■	■	■	■	■
i) best practice guideline		■			■				■

Estimated Cost: US\$ 200,000